**Slope** → equation for a line

→ constant rate of change

→ $\frac{\text{rise}}{\text{run}}$

→ x's & y's

→ $y = mx + b$

→ $\frac{y_2 - y_1}{x_2 - x_1} = m$ slope

**Points**

$(x_1, y_1)$

$(x_2, y_2)$

# Slope-intercept

$f(x) = mx + b$

$y = mx + b$

slope  y-int.

# Point-slope

$$y_2 - y_1 = m(x_2 - x_1)$$

$$y = m(x - x_1) + y_1$$

Slope

Point

# General Form

$$Ax + By = C$$

$$3x + 4y = 5$$

$$-3x \qquad\qquad -3x$$

$$\frac{4y}{4} = \frac{-3x+5}{4}$$

$$y = \frac{-3x+5}{4}$$

$y = 2(x - 3) + 9$ → point slope

$y = 2x - 6 + 9$

$y = 2x + 3$

$y = 2(0 - 3) + 9$

find y-int

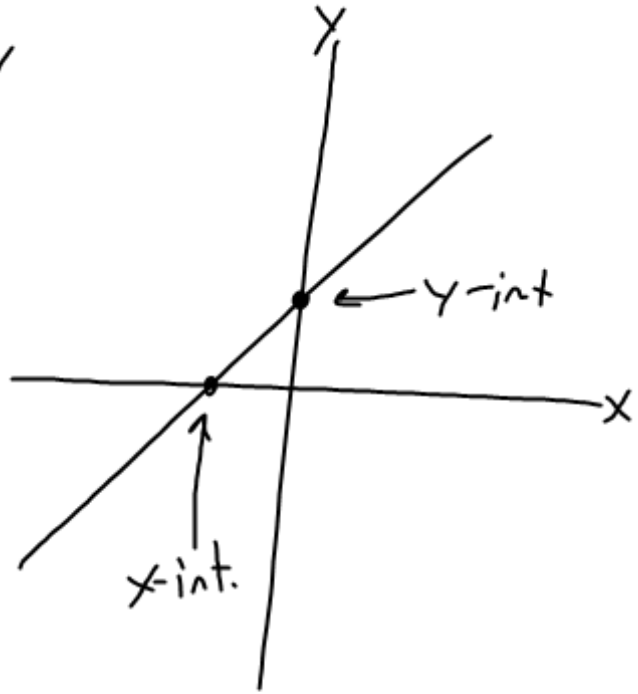
$y = 3$

$\Rightarrow$ $y = mx + b$

$y = 2x + 3$

x-intercept → plug 0 in for y

y-intercept → plug 0 in for x



$y = m(x - x_1) + y_1$

① Graph $5x - 2y = -4$

See next page

② Write an equation in point-slope form and slope-int. form for the line passing through the points $(-4, 10)$ $(-6, 15)$. Find the x-int. and y-int.

$$m = \frac{15 - 10}{-6 - -4} = \frac{5}{-2}$$

$y = -\frac{5}{2}(x + 4) + 10$ $\longrightarrow$ $-\frac{5}{2}(0 + 4) + 10$

y-int = 0

$y = mx + b$

$y = -\frac{5}{2}x$ x-int. plug 0 for y

$$\frac{0}{-2.5} = \frac{-2.5x}{-2.5}$$

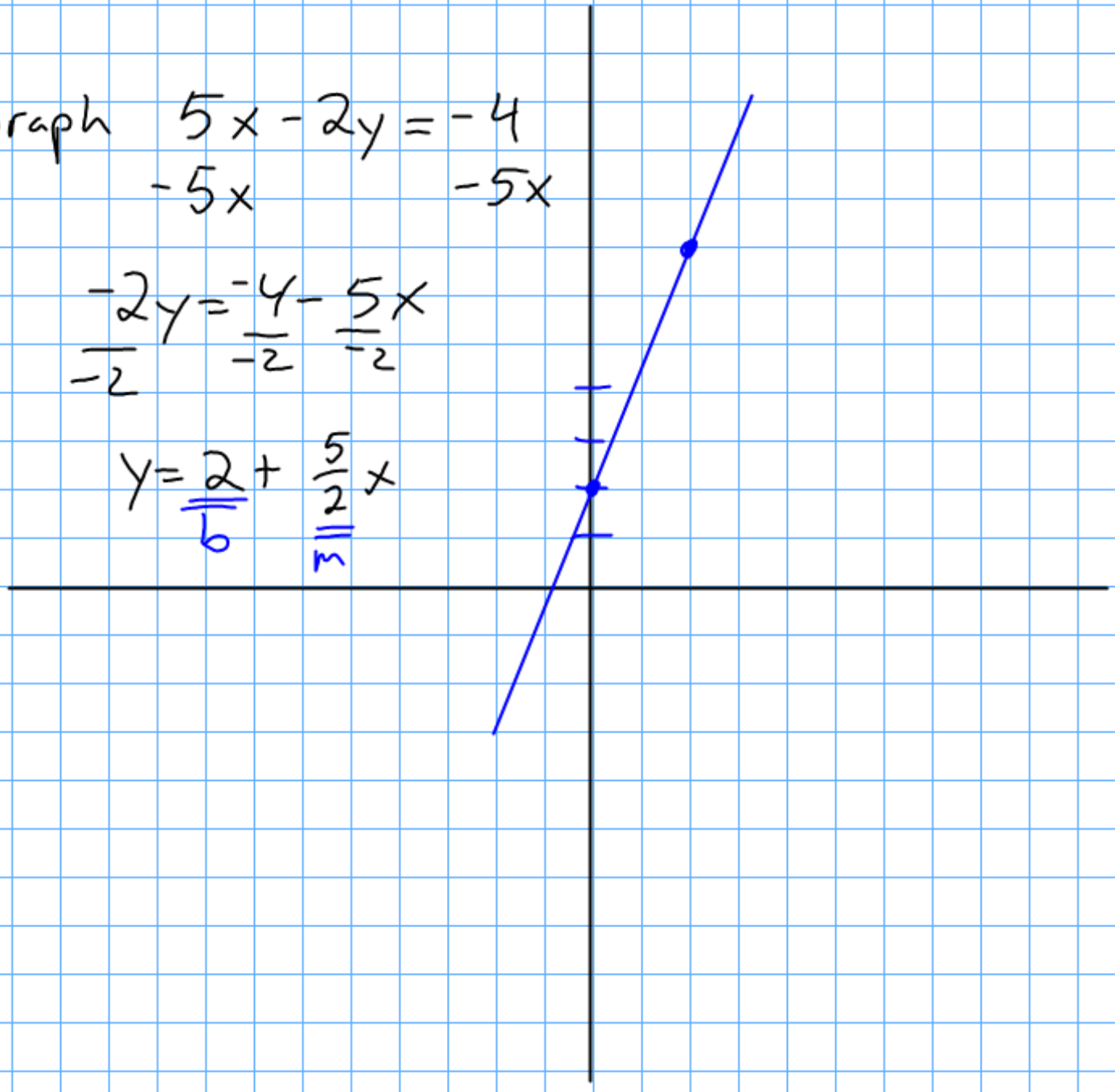
0 = x-int

① Graph $5x - 2y = -4$

$-5x \qquad -5x$

$\frac{-2y}{-2} = \frac{-4}{-2} - \frac{5x}{-2}$

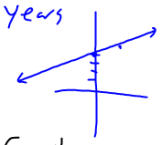
$y = \underset{b}{2} + \underset{m}{\frac{5}{2}}x$



③ A tree 5 feet tall grows on average 8 in a year. Write an equation to model the height, $y$, after $x$ years. Graph the equation.

inches → $y = 60 + 8x$ ← years

feet → $y = \frac{2}{3}x + 5$ ← years



④ A 2 mile cab ride costs $5.25 and a 5 mile cab ride costs $10.50. Write an equation to model the cost of a cab ride as a function of the miles traveled.

ⓐ How much does a 3.8 mile ride cost?

ⓑ How far can you go for $20.00?

$5.25 \div 2 = 2.625$

$10.50 \div 5 = 2.10$

(2, 5.25) (5, 10.50)

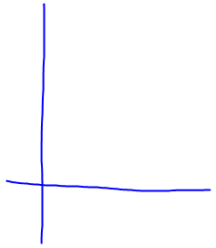
$\frac{10.50 - 5.25}{5 - 2} = \frac{5.25}{3}$

$y = 1.75(x - 5) + 10.50$

$y = 1.75x - 8.75 + 10.50$

$y = 1.75x + 1.75$

$y$: $ ; $x$: miles ; $1.75$: ?



$y = 1.75(3.8) + 1.75$

$y = \$8.40$

$20 = 1.75x + 1.75$

$-1.75 \quad -1.75$

$\frac{18.25}{1.75} = \frac{1.75x}{1.75}$

$10.43 = x$

#30

$f(t) = \frac{1}{2}t - 2$

$f(-5) = \frac{1}{2}(-5) - 2 = -4.5$

$f(-3) = \frac{1}{2}(-3) - 2 = -3.5$

$f(\frac{1}{2}) = \frac{1}{2}(\frac{1}{2}) - 2 = -1.75$

$f(4) = \frac{1}{2}(4) - 2 = 0$

Sect. 2.2

#6-10, 15-18, 20, 28, 54-56, 66

Green sheet (Front)